Benjamin D. Foulois

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Enlisting in the Army in 1898, Foulois was graduated from the Army Signal School in 1908 and learned to fly Army Dirigible No. 1. In 1910 he took the airplane to Fort Sam Houston, Texas, and learned to fly it by himself, aided by letters from the Wright brothers.

In 1911 Foulois designed the first airplane radio receiver and carried out the first airplane reconnaissance flights. In 1913 he was assigned to the Signal Corps Aviation School at San Diego, and in 1916 commanded the First Aero Squadron at Fort Sill, Oklahoma. In 1917 and 1918, he was chief of Air Service, AEF, Chief of First Army Air Service and Assistant Chief of Air Service AEF and Services of Supply. In 1925 he served at Mitchell Field, New York; as Assistant to the Chief of Air Corps in 1927; Chief of the Material Division, Wright Field, Ohio, in 1929; Commander of Air Corps Exercises in 1931; and Chief of the Air Corps until he retired in 1935 as a major general.

To Benjamin Delahauf Foulois, for outstanding contribution to aviation by his dedicated advancement of military aviation, his vision of the need for improved long-range military aircraft, and his inspirational leadership of the Army Air Corps, this award is most solemnly and respectfully dedicated. —Citation in National Aviation Hall of Fame, U.S. Air Force Museum, Wright-Patterson Air Force Base, Dayton, Ohio[1]

While best remembered as a pioneer in those days when aviation was in its infancy and "every flight was a first and every landing was a crash," Benjamin D. Foulois is also recognized as a trailblazer in military intelligence for his work in convincing the U.S. Army of the importance of aerial reconnaissance in the days of heavier-than-air machines. It was no easy task to sell the idea of manned aerial recon to a skeptical Army leadership, especially the Cavalry arm which considered itself the elite proprietor of reconnaissance. Army Aeroplane No. 1 was a Wright brothers product with a 4-cylinder, 25-horsepower, gasoline engine driving two propellers behind the pilot with a chain. This bamboo contraption had already killed one Army aviator, Lieut. Thomas E. Selfridge, during tests at Fort Myer. The cavalrymen called it a "kite" and Foulois and his enlisted crew of eight were known as the "crazy birdmen."[2]

Foulois and his men uncrated Army Aeroplane No. 1 at Fort Sam Houston, Texas, in February of 1910. With the ingenuity required of every soldier who best knows the limitations of his equipment, the lieutenant set about making needed modifications. With the help of a saddler in a field artillery battery, the world's first seat belt was fashioned out of a trunk strap. A blacksmith forged replacement parts. A plumber worked on the fuel lines and a tailor sewed linen surfaces. The landing skids were replaced with wheels. His $150 budget quickly disappeared and Foulois spent some $300 out-of-pocket to keep the plane in the air, buying a new propeller, elevator, rudders and new wings.

His orders from the Chief Signal Officer, Brig. Gen. James Allen, were simple enough. Allen instructed him "to evaluate the airplane…and teach yourself to fly." Foulois did so, relying upon a running correspondence with the Wrights. He said, "As far as I know, I am the only pilot in history who learned to fly by correspondence."[3]

The son of a Franco-Prussian War (1870-71) veteran, his father migrated to America, became a plumber, and married a Boston nurse in 1876. Benjamin Delahauf was born on 9 December 1879.

Anxious to make a contribution to the Spanish-American War, at age 17 he used his brother's birth certificate to enlist in the Army. In July the youthful Army engineer was steaming toward Puerto Rico in a rusty hulk called the *City of Chester*. He learned that only officers and horses were allowed on deck, and sweated out the journey below decks. By the time he reached Ponce, Santiago had been taken and within days of his debarkation an armistice was signed. He spent his time fortifying camps, repairing bridges, and battling the host of tropical diseases that plagued the expeditionary forces. He was one of two noncoms out of 40 in his unit that survived without contracting a deadly sickness, a fact Foulois credited to quinine and rum.

Mustered out in early 1899, he quickly grew tired of the routine in small Washington, Connecticut, and rejoined the Army, this time under his own name, and, with the 19th Infantry, headed for the Philippines. As a squad leader during the Philippine Insurrection, he saw considerable close combat. Sergeant Foulois was recommended by his CO for commissioning and after completing an examination he received his officer's commission on 9 July 1901. He valued his enlisted experiences highly, acknowledging the discipline that they instilled, and wrote that "all officers, regardless of background or schooling, should have probational duty with troops during the first year of their service, whether before or after their commissioning."[4]

It was while serving as topographical officer for General Leonard Wood in the summer of 1904 that Foulois was back in action, this time with Moro tribesmen. In a face-to-face battle with some Moros, he had a fingertip cut off and received a poison dart wound in his face. He accounted for two dead warriors, shot at point-blank range. A year later, in May 1905, he lead a company of Moro Scouts and Philippine constabulary to Jolo Island to track a Moro outlaw named Dato Pala. Along with elements of the 14th Cavalry and 17th Infantry, his scouts located a hostile fortification atop a mountain and for the next 96 hours assaulted the position. His scouts charged up the mountain from the south while the 14th Cavalry and 17th Infantry took the northern slopes. Foulois and his scouts closed to within knife range and killed 23 renegades, including Dato Pala. His force suffered four killed and six wounded.

A month later he was back in the states, first on leave in Connecticut, then as a student at the Infantry and Cavalry School at Fort Leavenworth. It was at the school he came into contact with Signal Corps officers who were enthused about airships powered by gasoline engines. He applied to attend the Signal Corps School and began classes there in September of 1907, after being promoted to first lieutenant. As his class thesis, Foulois selected "The Tactical and Strategical Value of Dirigible Balloons and Aerodynamical Flying Machines." In it he saw clearly the reconnaissance value of the airplane and the decisive advantage aerial reconnaissance would bring. He foresaw that the airplane would make the cavalry obsolete, recognized the application of photographic technology, and anticipated the need for air-ground communications through the "wireless telephone." He wrote in December 1907, several years before Billy Mitchell began propounding the revolutionary nature of the airplane as a military weapon, that "a modern military aeroplane…could not only reconnoiter the territory in front of an army more thoroughly

and in a fraction of time but could photograph all of its main features and have the finished prints in the hands of the commander in chief in a very short space of time." Foulois predicted in this seminal paper that the airplane had potential for "maintaining communications between elements of armies, for up-to-the-minute reconnaissance of enemy positions, and for artillery spotting to improve the effect of its fire power."[5]

Four months before Foulois submitted his thesis, the Signal Corps created the first Aeronautical Division, and on 23 December 1907 called for bids on a heavier-than-air flying machine. On the strength of his paper, Foulois was assigned to the aeronautical board with the job of conducting motorized, lighter-than-air trials at the Balloon Detachment, Fort Myer, Virginia. His experience with the dangerous and flimsy Dirigible No. 1 convinced him that the future of aerial recon was not in gas bags.

He was ordered back to Washington in June 1909 to take part in the tests of the Wright brothers' machine built at the request of the Army. While in Washington, he was asked by the general staff for his opinions of the dirigible and he gave his straightforward views, which ran contrary to those of his superiors in the Signal Corps. He "recommended that no more dirigibles be procured, and that we concentrate our interest in development of heavier-than-air vehicles. The Wright machine had already flown longer, faster, and more reliably than Dirigible No. 1. I could not see what anyone could ever do with an ungainly bag of gas to make it go much faster."[6] His outspokenness would become a characteristic that would get him into trouble throughout his career.

During the trials of the Wright brothers airplane at Fort Myers, Lieut. Foulois flew as a passenger-navigator on the afternoon of 30 July 1909. The pilot was Orville Wright. The plane flew at a speed of 42.5 miles per hours. On 2 August Aeroplane No. 1 was accepted by the U.S. Army.[7]

On his way to Fort Sam Houston, Texas, to continue tests, Foulois and Aeroplane No. 1 stopped in Chicago for the Fifth Annual Electrical Show in January 1910. Here he met Frank L. Perry, a Chicago ham radio operator, and the two of them achieved another aviation first. Hooking up antennas to the plane, they installed a standard, battery-operated, Army telegraph sending and receiving set behind the pilot's seat. Perry manned a similar telegraph in a corner of the exhibit hall while Foulois sat in the cockpit of the plane suspended 25 feet above the ground. They sent the first ground-to-cockpit wireless message.[8]

In order to overcome the general apathy within the Army about the airplane, Foulois worked hard to get his one-plane force included in the exercises planned for the maneuver division formed along the Mexican border in 1911. Eventually he received permission to join the exercise but on the condition that he did not "interfere" with exercises. Joined by Philip O. Parmalee, a Wright-trained pilot, Foulois took off on 3 March 1911 in a Collier-Wright B aeroplane to fly the first military reconnaissance mission in history. He and Parmalee flew along the Rio Grande River at an altitude of 1,200 feet from Laredo to Eagle Pass to search for "enemy" troops. They saw none on the 106-mile flight. While conducting preliminary flights at Laredo, a photographer from *Collier's* magazine arrived and was taken up on several flights. He took a number of pictures of the terrain and established another first—the beginning of photo reconnaissance and aerial map making.

When the Mexican bandit/revolutionary Pancho Villa attacked the American town of Columbus, New Mexico, on the night of 9 March 1916, Foulois was commanding the 1st Aero Squadron at Fort Sam Houston, Texas. With their six planes, mostly JN3s with a few Burgess models, the eleven officer pilots, 82 enlisted men, and one ci-

vilian mechanic of the 1st Aero Squadron were ordered to join the Pershing Punitive Expedition into Mexico and arrived at Columbus on 15 March. The following day, Foulois was in the air, making the first reconnaissance over foreign territory. He was able to report to Pershing that there no Mexican rebels within a day's march of his columns.

Relocating to Casas Grandes 125 miles into Mexico, the 1st Aero Squadron began its work in the winds, dust, and mountains of Mexico. Foulois recorded the difficulties they ran into.

> Between March 27 and 31 we managed to make about twenty flights carrying mail and despatches, during which we all encountered severe rain, hail, and snowstorms. By the end of our first ten days of operations it was obvious that our six planes were incapable of fully performing the task assigned. Their low-powered engines and limited climbing ability with the necessary military load made it impossible to operate them safely in the vicinity of the mountains. In addition, the dry atmosphere was hard on the wooden propellers, causing them to warp and the laminations to come apart.

In a memo to General Pershing, Foulois asked for ten later model planes, along with spare engines and parts, declaring that the "Jennys" "were not capable of meeting the present military service conditions." Damaged planes and the shortage of spare parts began to take their toll. By April 14 the squadron was down to three planes. They got four new planes a week later.

One of the aviators who served with the 1st Aerosquadron during the Punitive Expedition was Lieutenant John B. Brooks, a former 10th Cavalry officer at Huachuca who transferred to the Signal Corps' aeronautical section. He left a description of his operations in Mexico.

> The JN4's (or Jenny's) were the original planes that went into Mexico. The First Aero Squadron, which was the first unit of Aviation that we ever had in this country, was formed at Fort Sill, Oklahoma. They flew their eight planes from Fort Sill to San Antonio, Texas, for permanent station and that was the first unit cross-country flight that was ever made in this country. In the meantime they had built a field for them, just outside Fort Sam Houston. They had hardly settled down there when Villa attacked Columbus in March of 1916. Immediately they put their airplanes on flatcars. They came out to Columbus and they grubbed out a field there. They flew from there right into Mexico, right away. Well, there were a number of mountains down there, particularly Cumbre Pass that was eight or nine thousand feet above sea level, and these little airplanes with 65 horsepower engines didn't have the stuff to get up and get over those mountains. They were cracking them up right and left because they hadn't had experience and there were no fields down there. You had to find a place to set down. You wanted to land as close to the troops you could. So you might hit some sagebrush and bend a wing and you were out of commission for some time. So those original eight airplanes didn't last very long. …The new airplanes arrived. They were known as Curtiss B-2s and it was quite a wonderful airplane for that day and generation. It had a V8, 160 horsepower motor. It was the most powerful aviation motor that had ever been built in this country at that time, and the airplane was a fine, sturdy airplane, but like everything that's brand new there are always little bugs in it that have to be worked out through operational experience. Our biggest trouble that had to be solved right away was the wooden propellers. There were no steel propellers. They were made of laminated wood with one layer right after another to build up the propellers with the proper curves. They were made at Hammons Port, New York. They came down here to Columbus, New Mexico, and it was so dry that, after they'd been in use for a little while, that lamination, the glue all dried out and the propeller would fly to hell and gone in the air. You got down the best way you could. So we had really quite a time with those planes and I operated in Mexico

twice. They used to rotate us down there for about six weeks at a time and I served one six week period down at El Vaya and another one at Columbia de Blanco.

…We didn't have any machine guns mounted; we had no bombs. We were solely a reconnaissance outfit and most of the time used by General Pershing to bring back negative information. In other words, he was just as happy to know that the Carranzista troops were not at a certain place. He would get a bit of information saying that there were 250 Cavalry over at such and such a ranch. He'd send us out and we'd go over there and we would fly low around the corral of this ranch. If there were only five horses in there, why chances were that there weren't any Cavalry there.

We had message bags…and they had a long red streamer on them. They were weighed with shot and you could do pretty accurate hitting within fifty yards where you wanted to get them. The red streamer would call attention to the fact where they landed and you could then pick them up.[9]

Summing up the 1916 Mexican experience, Foulois wrote, "I consider the experience of our eight-plane air force to have been a vital milestone in the development of military aviation in this country. The machines were inadequate for the task assigned. Not only were they inadequate, they were downright dangerous to fly because of their age. Yet, we did a great amount of scouting over country in which cavalry and infantry could not operate, and we began and maintained the first regular aerial mail route for the United States and delivered thousands of letters to and from Pershing's troops."[10]

Apart from his pioneering efforts in aerial reconnaissance, Foulois made another significant, if unheralded, contribution to U.S. Army intelligence. In 1920 he volunteered to become military air attache to post-World-War-I Germany. While in that post he employed considerable ingenuity to gather important intelligence on the advances of German aviation technology, sending back his findings to the Military Intelligence Division.

Because the U.S. had not ratified the Treaty of Versailles and was therefore technically seen to be still at war with Germany, the other allies in the Aeronautical Inter-Allied Commission of Control refused to share any information with the U.S., a non-member of the commission. When he approached the chief of the commission, a RAF general told him that he would "get nothing through his office." Foulois explained how he got around this lack of sources.

This rebuff concerned me, but I had a job to do for my government and I felt there were other ways to get information. I found out that the place in Berlin where many of the German Luftwaffe pilots congregated was the bar of the Adlon Hotel. For the good of my country, I made that bar my headquarters for almost a year and found there the best sources of aviation information in all Germany. …I introduced them to good Allied whisky. …Their tongues gradually loosened to repay me for my generosity.[11]

Among these drinking acquaintances were Ernst Udet and Hermann Goering. They nominated him for membership in the two leading aviation organizations in Germany and he attended all their lectures and functions. He toured German factories, talked to engineers, and even flew their planes. Foulois realized that "they were still so far ahead of the rest of the world that I was genuinely shocked." He approached the Germans openly and offered to pay for their inventions. They agreed to do so if he did not pass any information on to the other allies. He explained:

From the moment I agreed to this condition the United States leaped ahead two decades in aeronautical progress. Using military intelligence funds, I started shipping German studies, plans, blueprints, and reports home by the ream. I was taken into the innermost recesses of aircraft, armament, and instrument factories and

shown exactly how far ahead the Germans were in aeronautics. They had been experimenting with new aircraft and weapon designs that were so far ahead of the times that it wasn't until more than forty years later that I fully realized how advanced they were. …I started shipping all sorts of aeronautical material out of Germany to the States right under the noses of the Allies. At one point I had accumulated enough to fill a boxcar."[12]

Additional avenues of information Foulois pursued were the memoirs of German scientists whose vanity, he reported, "was a goldmine." In a report to the Military Intelligence Division he listed 180 contacts who were his sources of information. He said, "They represented the entire spectrum of the aeronautical sciences and were all in the top echelons of their professions." Summing up his four years in Germany, Foulois wrote, "…I felt an honest sense of accomplishment. …My policies of playing fair with our former enemies and paying for what we got netted millions dollars' worth of advanced aeronautical data for the United States. I only hoped that it was being put to good use in America."[13]

But this was not the case. Foulois wrote unhappily, "The lack of an air intelligence collection system, inexperience on the part of the military intelligence officers in regard to aeronautics, and a lack of appreciation for the potential value of the fruits of German genius caused much of the material I sent to end up unopened in a warehouse and later sent to the trash heap.

A high-ranking member of the general staff told Foulois when he returned from Germany, "This is peacetime and the war has been over for more than five years. Most of that junk you sent was either so old or so farfetched that not even a museum would be interested in it. If we ever go to war again, none of that stuff will ever be of any value." This shortsighted view of military intelligence may have been all too common in the U.S. Army between world wars.

He became a brigadier general during World War I, and served as chief of the Air Service, American Expeditionary Force, reverting to the rank of major at war's end. He held a number of important positions within the U.S. Army Air Corps, eventually holding the top post in the corps. Foulois became Chief of the Army Air Corps from 1931 to 1935 when he retired. He devoted the remaining 32 years of his life to the military aviation cause, speaking around the country and writing, as he did as a student in 1907, about the potential of airpower. He died at Andrews Air Force Base on 25 April 1967.[14]

Notes

1. In addition to being in the National Aviation Hall of Fame, Foulois is a member if the Military Intelligence Hall of Fame at the U.S. Army Intelligence Center and Fort Huachuca.

2. Foulois, Maj. Gen. Benjamin D., From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois, with Colonel C. V. Glines, USAF, McGraw-Hill, New York, 1968, pp. 2-3.

3. *Ibid*, p. 2.

4. *Ibid.*, p. 25.

5. *Ibid.*, pp. 44-45. The seeds of aerial recon doctrine were embedded throughout Foulois' thesis, which is quoted here at greater length:

In all future warfare, we can expect to see engagements in the air between hostile aerial fleets. The struggle for supremacy in the air will undoubtedly take place while the opposing armies are maneuvering for position, and possibly days before the opposing cavalry

forces have even gained contact. The results of these preliminary engagements between the hostile aerial fleets will have an important effect on the strategical movements of the hostile ground forces before they have actually gained contact.

The successful aerial fleet, or what remains of it, will have no difficulty in watching every movement and disposition of the opposing troops, and unless the opposing troops are vastly superior in numbers, equipment, and morale, the aerial victory should be an important factor in bringing campaigns to a short and decisive end.

* * *

In the few experiments in receiving wireless messages in a free balloon, no difficulty has as yet been encountered. As regards sending, no attempts have as yet been made by our aeronauts, due to the danger of sparks being thrown off from the antenna, which, while being used in sending, carries many thousand volts. There can be no doubt, however, that this difficulty, as well as all others incident to the practical application of wireless in both sending and receiving, will soon be overcome.

A Frenchman by the name of Berjonneau has perfected an instrument by which photographs may be transmitted by wireless over a considerable distance. If this instrument can be relied upon, and the wireless telegraph made applicable to aerial craft in flight, the aerial fleet of an army will not only be invaluable in securing data of the country over which it passes, but will be able to transmit at once by wireless photographs of the area passed over.

6. *Ibid*., p. 59.

7. On 27 October 1909 Mrs. Ralph Van Deman became the first American woman to be a passenger in an airplane when she was given a ride by Wilbur Wright. She was a close friend of Katherine Wright, sister to the Wright brothers, and the wife of Captain Van Deman who would be remembered for his efforts to create a professional military intelligence organization within the U.S. Army.

8. On 18 June 1861 the 28-year-old New Hampshire professor, Thaddeus C. Lowe, in a demonstration for President Lincoln, sent a telegraph message from the basket of a balloon tethered 500 feet over Capitol Hill in Washington, D.C. to War Department telegraphers on the ground. The balloon was connected to the ground by a telegraph cable. In his telegram to the president, Lowe said: "This point of observation commands an area near fifty miles in diameter. The city, with its girdle of encampments, presents a superb scene. I have pleasure in sending you this first dispatch ever telegraphed from an aerial station, and in acknowledging indebtedness to your encouragement, for the opportunity of demonstrating the availability of the science of aeronautics in the military service of the country." [Stepp, John W., and I. William Hill, *Mirror of War: The Washington Star Reports the Civil War*, Castle Books, Washington, D.C., 1961, p. 52.]

9. Brooks, Maj. Gen. John B., USAF, interview. Typescript in Fort Huachuca Museum files. He served as a 2d lieutenant with D Troop, 10th Cavalry, arriving with the regiment on 19 December 1913. He left in December 1915 to enter the Air Service of the U.S. Army Signal Corps.

10. Foulois, p. 136. Another source, [Goddard, George W., *Overview: A Life-Long Adventure in Aerial Photography*, Doubleday, NY, 1969] says 19,000 miles were logged doing recon and photographic missions.

11. Foulois, p. 189.

12. Foulois, pp. 191-2.

13. Foulois, p. 194.

14. Shiner, John F., "FOULOIS, Benjamin D.," in Spiller, Roger

J., ed., *Dictionary of American Military Biography*, Vols I-III, Greenwood Press, Westport, Connecticut, 1984, pp. 343-7.